

# **Examining Part-Time Faculty Utilization and its Impact On Student Retention at a Public Research University**

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# **Examining Part-Time Faculty Utilization and its Impact On Student Retention at a Public Research University**

## **Abstract**

The important concern surrounding growing reliance on part-time faculty is its effect on student retention. Existing studies explored the relationship between part-time faculty utilization and retention of entering cohorts. The study herein assesses retention of the entire population of degree-seeking undergraduates at a single institution. The findings suggest that exposure to part-time faculty generally reduces the probability of subsequent enrollment, but the effects are marginal and disappear after controlling for other student characteristics. Freshmen are more likely to enroll in courses taught by part-time faculty, but the effect of exposure to part-time faculty does not differ across student classification.

## Introduction

Recent data indicates that the number of part-time faculty and instructors is growing in all institution types. In Fall 2003, 44% of the faculty and instructors were employed part time (Cataldi, Fahimi, Bradburn, and Zimbler, 2005). The increase in the number of faculty members from 2001 to 2003 was considerably higher for part-timers (“More Faculty Jobs Go to Part-Timers”, 2005). According to the 2004 edition of the *Digest of Education Statistics*, in Fall 2003, 30% of the faculty at public 4-year colleges were employed part-time, 46% of the faculty at private 4-year colleges were employed part-time, and 68% of faculty at public 2-year colleges were employed part-time. Increasing reliance on part-time faculty prompts questions about its advantages and disadvantages for students, institutions, and the part-time faculty themselves.

Increasing reliance upon part-time faculty is caused by a variety of reasons and has several advantages. The most important reason for hiring part-time faculty is budgetary constraints. Colleges “can hire up to two dozen part-time faculty for roughly the same amount it costs to hire a full-time faculty member” (Stephens & Wright, 1999). Another important advantage is providing institutional flexibility: when enrollment drops “the number of part-time faculty is easily adjusted by not renewing contracts” (Banachowski, 1997). Departments with a professional orientation also seek to hire part-time faculty who possess practical experience and expertise in the area (Banachowski, 1997, Haeger, 1998). Last, but not least, sometimes part-time faculty themselves are “grateful for being able to teach part-time because of the prestige and fulfillment it adds to their life” (Reed, 1985, cited in Banachowski, 1997).

Increased use of part-timers also raises several concerns. Part-timers typically lack job stability, adequate support services, office space, benefits, professional development opportunities, and equal pay for equal work. Their lower earnings and lack of benefits are “likely to interfere with their work” (Benjamin, 2002) and their employment conditions can lead to dissatisfaction (Gappa, Leslie, 1997). Finally, an important concern surrounding reliance on part-time faculty is related to the academic quality of instruction and the overall academic experience of students. “It’s conceivable that face-to-face exchanges between students and faculty outside the classroom will decline because part-time faculty spend less time on campus and often do not have a designated space to meet with students after class” (Kuh, Laird, Umbach, 2004).

From the institutional perspective employing part-time faculty provides financial benefits and flexibility in cases of declining enrollment. However, these benefits may result in deteriorating quality of instruction and, consequently, in student attrition. Student attrition creates high financial costs for the institutions, not to mention the financial and personal losses it causes to students. The purpose of

this study is to explore the extent of student exposure to part-time faculty and its relation to student retention at a single institution. It addresses the following questions:

- What is the average share of courses taught by part-timers by student classification (freshmen, sophomores, juniors, and seniors)?
- Does exposure to part-time faculty (or, the share of courses taught by part-timers) have a negative impact on student retention?
- Does the impact of part-time faculty utilization vary across student classification?

Both, the overall relation between the exposure to part-time faculty and student retention and the relation after controlling for selected student groups are studied. Results of this research inform campus administrators about the level of exposure to part-time faculty and allow defining whether financial costs from student attrition are associated with financial benefits of employing part-timers at a study institution.

## **Background**

The use of part-time faculty has received considerable attention in recent publications (e.g., Dan, 2005, Conley and Leslie, 2002, Gappa and Leslie, 1993). The majority of existing research has focused on describing part-time faculty, their demographics, work patterns, and motivations. Many studies state that the lack of institutional support diminishes part-time faculty's accessibility, which could have a significant impact on the probability of student success (e.g., Stanback-Stroud, Collins, Harmon, Higgs, Setziol, Smith, Smith, and Rockwell, 1996, Benjamin, 2002, Kuh, Nelson, Umbach, 2004). However, only a few studies examined the relationship between part-time faculty utilization and student retention.

Research examining the relationship between part-time faculty utilization and student retention provides inconclusive evidence. Burgess and Samuels (1999) suggest that in sequential college courses part-time instructors underprepare students for subsequent courses taught by full-time instructors. Students who take the first course from a part-time instructor and the second course from a full-time instructor are significantly less likely to either complete the second course or achieve a grade of "C" or better in the second course. Kehrberg and Turpin (2002) studied the relationship between exposure to part-time faculty and first-year retention. The overall negative association disappeared after controlling for student academic preparation. Ronco's (2004, p.17) study "uncovered little evidence that instructor type has a widespread impact on student outcomes... Part-time instructors rarely showed any statistically significant differences in their comparisons to other instructor types." Schibik and Harrington (2004, p.5) indicate that "holding academic preparation constant, exposure to part-time faculty at levels above 50% during their first semester on campus has a direct and significant negative

impact on student retention into the second semester.” Thus, some studies showed no difference in student retention rates depending upon full- and part-time faculty after controlling for academic preparation (Kehrberg and Turpin, 2002, Ronco, 2004). Others indicated significant differences in success and retention of students depending on faculty status (Burgess and Samuels, 1999, Schibik and Harrington, 2004).

Previous studies examining the relationship between exposure to part-time faculty and student retention did not consider the entire student population and focused either on one-year retention of first-time freshmen (Kehrberg and Turpin, 2002, Schibik and Harrington, 2004, Ronco, 2004), or on performance and retention in sequential courses (e.g., Burgess and Samuels, 1999). The study herein considers the entire population of degree-seeking undergraduates at a single institution, the share of courses taught by part-timers across student classification, the fall to spring retention for non-senior students enrolled in the fall semester, and the spring to fall retention for non-senior students enrolled in the spring.

## **Data and Method**

The study institution is a Midwest public research university enrolling eleven to twelve thousand students each year. About 80% of these students are degree seeking undergraduate students. Two data sets were analyzed in this study: the data set for faculty members teaching in 2004-2005 academic year (faculty data) and the data set for students enrolled in Fall 2004 and Spring 2005 (student data)<sup>1</sup>. The analysis of faculty data allowed assessing demographic characteristics and education of part-time instructors and non-tenure/tenure track faculty as compared to full-time tenure/tenure track faculty at the study institution. The analysis of student data allowed examining exposure to part-time and non-tenure/tenure track faculty and its effect on student retention.

Students in the dataset were grouped by their demographic characteristics (age, gender ethnicity), academic performance (high school GPA for new freshmen, transfer GPA for new transfers, and cumulative GPA as of the beginning of the semester for new transfers), college experience during a semester of enrollment (college of enrollment, financial aid, part- or full-time enrollment, and on campus residence), classification based upon overall earned hours at the beginning of a semester<sup>2</sup>, and the share of courses taught by part-time instructors.

The study herein follows the methodology applied in previous studies of exposure to part-time faculty and retention (Kehrberg and Turpin, 2002, Schibik and Harrington, 2004, Ronco, 2004). The

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<sup>1</sup> Incarcerated students were excluded from the analysis.

<sup>2</sup> Sophomore: more than 31 hours earned; Junior: more than 62 credit hours earned; and Senior: more than 93 credit hours earned.

share of courses taught by part-time instructors was defined as the number of courses taught by part-timers divided by the overall number of courses a student was enrolled in.

Part-time faculty are frequently referred to as adjuncts (e.g. Ronco, 2004) Adjunct professors are hired either part- or full-time on a contract (as opposed to a regular) basis, i.e. outside the regular pay plan. To provide results comparable to other studies, the study herein considers both effects of the share of courses taught by part-time faculty and the share of courses taught by adjunct faculty (hereinafter referred to as either adjuncts, temporary, or non-tenure/tenure track faculty) on retention.

A descriptive analysis was carried out to assess demographic characteristics and education of part-time instructors as compared to full-time faculty, the share of courses taught by part-timers across student classification and colleges, and the relation between the share of courses taught by part-timers and student retention. The descriptive analysis of relation between exposure to part-time faculty and retention is based on odds and odds ratios. The odds of persistence vs. departure are defined as follows:

$$\Omega = \frac{\pi_1}{\pi_0}, \quad (1)$$

where  $\pi_1$  is the number of students who stayed and  $\pi_0$  is the number of students who left.

Accordingly, the odds ratio of persistence vs. departure is the ratio of the odds  $\Omega_i$  and  $\Omega_j$ :

$$\theta = \frac{\Omega_i}{\Omega_j} = \frac{\pi_{1i}/\pi_{0i}}{\pi_{1j}/\pi_{0j}}, \quad (2)$$

Where  $\Omega_i$  represents odds of persistence for a particular group (for example, students who took 75% to 100% of classes taught by part-timers) and  $\Omega_j$  represents odds of persistence for all students. If  $\Omega$  is greater than 1, the persistence is more likely than departure. If  $\theta$  is greater than 1, then the persistence in a particular group is more likely than the overall persistence.

The logistic regression analyses were employed to evaluate the impact of exposure to (share of courses taught by) part-time faculty and adjunct faculty on the odds of persistence from fall to spring and from spring to fall for selected control groups. For the purposes of the analysis of the effect of exposure to part-time and adjunct faculty on student retention, the senior students and those who graduated were excluded from the data set. To assess whether exposure to part-time faculty has an effect on retention, the nested or hierarchical approach is employed (see Powers and Xie, 2000, pp.22-24). The goodness-of-fit of the model including the effect of exposure to part-time faculty is compared to the goodness-of-fit of the model without the effect of exposure to part-time faculty. If the former fits significantly better than the latter, the effect of exposure to part-time faculty is significant after

controlling for other substantive predictors. Assessment of difference in models' fit is conducted based on reductions in deviance or log-likelihood multiplied by -2 (see Menard, 1995, pp.19-21) and on Akaike (AIC) and Bayesian (BIC) information criteria that penalize models with additional parameters:

$$AIC = -2LL + 2(\text{number of model parameters}) \quad (3)$$

$$BIC = -2LL + (\ln(N))(\text{number of model parameters}), \quad (4)$$

where  $\ln(N)$  is the natural logarithm of the sample size (Singer and Willett, 2003, pp.121-122).

### **Part-time Faculty and Temporary Faculty at a Study Institution**

At the study institution approximately 25% (152) of the faculty and 21% of all primary instructors of record (including administrative staff and graduate assistants), were teaching part-time during the fall semester of 2004 and the spring semester of 2005 (see Table 1). About 16% (73) of the full-time faculty were hired on a contract basis and held positions that were not tenure/tenure track. The overwhelming majority of part-time faculty (96%) held positions that were not tenure/tenure track. Almost all part-time faculty held the rank of a lecturer, all full-time non-tenure/tenure track faculty held the rank of an instructor. Among full-time tenure/tenure track faculty, about 39% held the rank of an Assistant professor, 28% ranked as an Associate professor, and 32% had the rank of a Professor.

Part-time faculties were less likely to have completed a doctorate or equivalent degree (11%) than full-time faculty (75%). Full-time non-tenure/tenure track faculties were less likely to have completed a doctorate or equivalent degree (15%) than full-time tenure/tenure track faculty (86%). The highest degree obtained by part-time and full-time non-tenure/tenure track faculty was typically a master's (59% and 78% consecutively). No information on the highest degree obtained was available for 13% of the part-timers.

The share of female faculty was considerably higher among part-timers. About 51% of the part-time faculties were females, and only 38% of the full-time faculties (36% of tenure/tenure track and 45% of non-tenure/tenure track faculty) were females. On the average, part-timers were younger than full-time faculty and full-timers hired on a contract basis were, on the average, younger than the full-timers hired on a regular basis. About 17% of part-time faculty were younger than 30 and less than 3% of full-time faculty (less than 1% of tenure-tenure track full-time faculty and 15% of non-tenure/tenure track faculty) were younger than 30. Approximately 38% of the part-time faculty, 27% of full-time non-tenure/tenure track faculty, and 53% of full-time tenure-tenure track faculty were 50

years of age or older. The share of minority (non-Caucasian) faculty was similar across employment and tenure/tenure track statuses.

During the fall 2004, full-time faculty at the study institution taught 4.29 course units while the part-time faculty taught 2.62 course units. The full-time faculty generated on average 10.30 credit hours while the part-time faculty generated 6.52 credit hours. During the spring 2005, the full-time faculty at the study institution taught 4.04 course units while the part-time faculty taught 2.26 course units. The full-time faculty generated on average 10.22 credit hours while the part-time faculty generated 5.89 credit hours. Average number of course units and credit hours was similar for the full-time tenure/tenure track and the full-time non-tenure/tenure track faculty.

The share of part-timers as primary instructors of record was the highest in Nursing and Education (32% and 33% consecutively). In Arts and Sciences the share of part-timers was 19%, in Business – 25%, in Health and Human Performance – 17%, and in Technology – 16%. The share of non-tenure/tenure track full-time faculty was the highest in Technology (17%). The share of both full- and part-time non-tenure/tenure track faculties was the highest in the College of Education (44%).

Overall, approximately a quarter of primary instructors of record at the study institution were teaching part-time. About 31% of the full- and part-time primary instructors of record were non-tenure/tenure track. Part-time employment status and tenure status was related to various faculty characteristics: gender, age, and education. The shares of female faculty and younger faculty were higher among part-time and non-tenure track faculty as compared to full-time tenure/tenure track faculty. Tenure/tenure track faculty typically held a doctorate or equivalent degree, while part-time and non-tenure/tenure track full-time faculty typically held a master's degree.

### **Exposure to Part-Time Faculty and Student Retention: A Descriptive Analysis**

Exposure to part-time faculty varied depending upon a student's classification<sup>3</sup>. As compared to sophomores, juniors, and seniors, freshmen were more likely to enroll in classes taught by part-timers. In the fall semester, the average share of courses taught by part-timers was 15% for freshmen, 11% for sophomores, 10% for juniors, and 11% for seniors (see Graph 1). The average share of courses taught by part-timers in the spring semester constituted 11% for freshmen, 10% for sophomores, 10% for juniors, and 9% for seniors (see Graph 2). The average share of courses taught by faculty hired on a contract basis was slightly higher for freshmen and sophomores as compared to juniors and seniors. In the fall semester, the average share of courses taught by temporary faculty was 29% for freshmen, 28% for sophomores, 25% for juniors, and 24% for seniors (see Graph 1). In the

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<sup>3</sup> Student type was determined by the number of credits completed: 31 hours for Sophomores; 62 credit hours for Juniors; and 93 credit hours for Seniors.



spring semester, the average share of courses taught by temporary faculty was 29% for freshmen, 31% for sophomores, 27% for juniors, and 23% for seniors (see Graph 2).

Analysis by the student's college of record (see Graphs 3 and 4) demonstrates that students in the College of Education, College of Business, and Student Academic Services (undecided and conditionally admitted) were more likely to be enrolled in classes taught by part-timers and full-time non-tenure/tenure track faculty.

Previous studies (e.g., Harrington and Schibik, 2001; Kehrberg and Turpin, 2002) indicate that exposure to part-time faculty at levels above 50% had a negative effect on student retention<sup>4</sup>. At the study institution, the number of students who took more than 50% of classes taught by part-timers was rather small (less than 2%, see Table 2). About one fifth of the students had more than 50% of their classes taught by full- or part-time not tenure/tenure track instructors (see Table 3). Students who had earned 93 credit hours or more (seniors) and students who had graduated were not included in the analysis of the effect of exposure to part-time faculty and non-tenure/tenure track faculty on retention.

The results of Table 4 indicate that students who were not enrolled in classes taught by part-timers were less likely to return than students who took 1%-24% of classes taught by part-timers. Students who took 1%-24% of their classes taught by part-timers were 1.27 (7.92/6.26) times as likely to return in subsequent semester as those who did not take classes taught by part-timers in the fall semester and 1.28 (5.85/4.58) times as likely to return as those who did not take classes taught by part-timers in the spring semester. Students who took 25%-49% of classes taught by part-timers were less likely to re-enroll in the subsequent semester than those who either did not take classes taught by part-timers or took 1-24% of classes taught by part-timers. For example, students who took 25%-49% of courses taught by part-timers in the fall semester were 0.81 (5.07/6.26) times as likely to re-enroll in the subsequent semester as those who did not take classes taught by part-timers and 0.64 (5.07/7.92) times as likely to re-enroll as those who took 1%-24% of classes taught by part-timers. Students who took 50% to 74% of courses taught by part-timers were less likely to re-enroll in the subsequent semester than those who did not take classes taught by part-timers, took 1%-24% of classes taught by part-timers, or 25%-49% of classes taught by part-timers. Students who took 75% to 100% of courses taught by part-timers were less likely to re-enroll in the subsequent semester than those who did not take classes taught by part-timers or took less than 75% of classes taught by part-timers.

Students who did not take classes taught by adjuncts were more likely to return than students who took 1%-24%, 25%-49%, or 50%-74% of classes taught by adjuncts (see Table 4). For example, students who took 1%-24% of classes taught by adjuncts were 2.00 (9.33/4.66) times as likely to

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<sup>4</sup> In the study of Kehrberg and Turpin (2002) the effect of exposure to part-time faculty on college GPA and student retention disappeared when academic preparation and first year experiences were controlled for.

return as those who did not take classes taught by adjuncts in the fall semester and 1.58 (6.16/3.91) times as likely to return as those who did not take classes taught by adjuncts in the spring semester. However, students who took 75% or more classes taught by adjuncts were less likely to re-enroll in the subsequent semester than those who did not take classes taught by adjuncts or took 1%-24%, 25%-49%, or 50%-74% of courses taught by adjuncts.

The analysis of the overall relationship between exposure to part-time/adjunct instructors and retention illustrated higher odds of subsequent enrollment for those who took less than 25% of their courses taught by part-timers and less than 75% by adjuncts. However, the subsequent analysis revealed that this relationship is strongly affected by the overall number of courses a student took in a relevant semester. The results of Tables 5 and 6 illustrate strong correlation between exposure to part-time/adjunct faculty and the number of courses taken. For example, students taking four or less classes have zero probability of taking 1% to 24% of classes taught by part-time/adjunct faculty. Based on the results of Tables 3 and 4, students enrolled in 1%-24% of classes taught by part-time/adjunct faculty are also most likely to return in the subsequent semester. Since student part-time enrollment is a risk factor or determinant of departure (e.g., Adelman, 1999, O'Toole, Stratton, Wetzel, 2003), the association between the share of courses taught by part-time/adjunct faculty and retention can be accounted for student enrollment status (full- or part-time) rather than for exposure to part-time/adjunct faculty. Table 7 represents odds of persistence for each level of exposure to part-time/adjunct faculty by student enrollment status (full- or part-time). The results of Table 7 indicate that the odds of reenrollment are significantly lower for part-time students and that the effect of exposure to part-time faculty disappears after controlling for student enrollment status. Although the student enrollment status attenuates the effect of exposure to temporary faculty on retention, the results of Table 7 indicate that students who took less than 75% of courses taught by adjuncts are more likely to reenroll in the subsequent semester.

Odds ratios were estimated to assess the effect of exposure to part-time faculty across student classification. Cells of Table 8 represent odds ratios of departure vs. persistence for each level of exposure to part-time/adjunct faculty across student classification. For example, the first data cell represents the ratio of odds of persistence for freshmen who did not take classes taught by part-timers and odds of persistence for all students who did not take classes taught by part-timers. The results of Table 8 indicate that sophomores are more likely to persist than freshmen and juniors are more likely to persist than freshmen or sophomores. (The odds ratios in the columns for freshmen are lower than the odds ratios for sophomores, and the latter are lower than the odds ratios for juniors.) However, odds ratios across different levels of exposure to part-time faculty were quite similar within the

columns representing student's classification. Few exceptions were not consistent across the semesters. These findings indicate that the effect of exposure to part-time faculty does not differ across student classification.

The descriptive analysis illustrated that the negative association between exposure to part-time faculty and student retention was rather the product of correlation between exposure to part-time faculty and student enrollment status: students enrolled part-time were more likely to have higher levels of exposure to part-time faculty and less likely to re-enroll in subsequent semesters. Thus, a negative correlation between exposure to part-time faculty and re-enrollment is rather a statistical artifact caused by the way the index was constructed. Part-time students at the study institution were more likely to enroll in 50% to 100% of courses taught by part-time faculty. For a student taking one or two classes the share of their classes taught by a part-timer would be 50% if one taken course was taught by a part-timer. For a student taking six classes the share of classes taught by a part-timer would be 50% only if three taken courses were taught by part-timers. Overall, the descriptive analysis suggests that in logistic regression analysis the negative association between exposure to part-time faculty and retention would disappear after controlling for students' characteristics, particularly student enrollment status, and that the interaction effects of the level of exposure to part-time faculty and student classification would not be significant.

### **Exposure to Part-Time Faculty and Retention: Logistic Regression Models**

To assess the effect of exposure to part-time faculty on retention after controlling for other student characteristics the study herein employs logistic regression. The dependent variable in the models equals one if a student re-enrolled in the subsequent semester. Explanatory variables include: the level of exposure to part-time faculty, demographic characteristics (gender, ethnicity, age), grades (high school GPA for new freshmen, transfer GPA for new transfer students, cumulative GPA for continuing students), student classification defined based on the overall number of earned hours<sup>5</sup>, indicator of whether a student lived on-campus, the college, and the type of financial aid received, and student enrollment status (full- or part-time).

Based on descriptive analysis, it was hypothesized that the effect of exposure to part-time faculty would disappear after controlling for the student enrollment status (full- or part-time). Table 9 presents four models of retention from the fall to spring semester and four models of retention from the spring to fall semester. Model A does not include student enrollment status and exposure to part-time faculty (or, share of courses taught by part-timers). Model B adds exposure to part-time faculty to

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<sup>5</sup> Two binominal variables (first variable equals 1 if a student is freshman and second variable equals 1 if a student is sophomore) were included. Juniors were treated as a reference category.

Model A. The difference in deviances for models A and B shows that including exposure to part-time faculty significantly improves the model fit. Changes in -2LL constitute 13.31 (4) for the model explaining fall to spring retention and 14.35 (4) for the model explaining spring to fall retention. Both changes are significant at the .01 alpha levels. The coefficients for different levels of exposure to part-time faculty in model B are consistent with descriptive findings before controlling for part-time student enrollment and indicate higher odds of subsequent enrollment for those who took less than 25% of courses taught by part-timers. For example, students who took 25%-49% of classes taught by part-timers in the fall semester were 0.91 ( $e^{-.10}$ ) times as likely to enroll in the spring semester as those who did not take courses taught by part-timers and 0.78 ( $e^{-.10-.15}$ ) times as likely to enroll in the spring semester as those who took 1%-24% of courses taught by part-timers (see Model B, for fall to spring retention, Table 9).

Model C includes student enrollment status, but does not include the exposure to part-time faculty. Model D adds exposure to part-time faculty to Model C. A comparison of models C and D illustrates that after controlling for part-time student enrollment, exposure to part-time faculty does not have a significant effect on retention. Differences in deviances between models C and D are not significant at the .05 alpha level (7.44 (4) for the models of fall to spring retention and 8.07 (4) for the model of spring to fall retention). Based on AIC and BIC criteria, Model C explains retention from the fall to spring and from the spring to fall best. Adding interaction effects of exposure to part-time faculty and student classification did not significantly change the model fit<sup>6</sup> thus confirming that the effect of exposure to part-time faculty does not differ across student classification.

Overall, consistent with descriptive findings the logistic regressions suggest that the overall negative association between exposure to part-time faculty and retention is rather the function of correlation between student part-time status and the share of courses taught by part-timers.

Table 10 presents models of retention from fall to spring and spring to fall before and after controlling for exposure to temporary faculty and student enrollment status. The difference in deviances for models A and B shows that including exposure to temporary faculty significantly improves the model fit. Changes in -2LL constitute 28.24 (4) for the model explaining fall to spring retention and 19.79 (4) for the model explaining spring to fall retention. Both changes are significant at the .01 alpha levels. Differences in deviances between models C and D (models including student enrollment status) are significant at the .05 alpha level (12.21 (4) for the models of fall to spring retention and 12.49 (4) for the model of spring to fall retention). However, the only effect that is

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<sup>6</sup> Changes in -2LL for models D and models including interaction effects of exposure to part-time faculty and student classification (these models are not presented herein but available upon request from the author) were not significant at the .05 alpha level: 10.91 (8) for fall to spring retention and 13.15 (8) for spring to fall retention.

significant in models D for both fall to spring and spring to fall retention is the effect of the share of 1% to 24% of courses taught by temporary faculty indicating that those taking 1%-24% of courses taught by temporary faculty are more likely to return in the subsequent semester than those who did not take courses taught by temporary faculty. Based on BIC criteria, model C explains retention from fall to spring and from spring to fall best. Adding interaction effects of exposure to part-time faculty and student classification did not consistently change the model fit<sup>7</sup> thus not providing enough evidence to conclude that the exposure to temporary faculty differ across student classification.

The results of logistic regressions were consistent with the results of descriptive analyses and suggest that the effect of exposure to part-time/temporary faculty on retention is marginal and disappears after controlling for other student characteristics. The analysis also reveals that index of exposure to part-time/temporary faculty used in the study herein and in previous studies of exposure to part-time faculty is highly correlated with full- or part-time student enrollment status (and, the overall number of courses a student took in a particular semester), and the negative overall association between exposure to part-time faculty and retention is rather the function of student enrollment status then experiences in classes taught by part-timers or temporary professors.

## **Conclusions and Implications**

Previous studies demonstrated that part-time faculty perceived lower levels of support from their institution and frequently held additional full-time employment. Different conditions of employment for part-time faculty might have an adverse impact of part-time faculty utilization on students' retention and grade performance. Several recent studies demonstrated that there is an overall negative association between the exposure to part-time faculty and retention. In two out of three studies this negative association disappeared after controlling for other student characteristics. The study herein also demonstrates that the negative association between exposures to part-time/temporary faculty disappears after controlling for other substantive predictors. It also reveals that the variable measuring exposure to part-time faculty (that was utilized in previous studies of association between exposure to part-time faculty and retention) is strongly affected by student enrollment status (full- or part-time). The probability of taking 50% or more courses taught by part-time/temporary faculty increases as the overall number of courses taken by a student decreases. Since student part-time enrollment is a risk factor or determinant of departure the association between the

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<sup>7</sup> Changes in -2LL for models D and models including interaction effects of exposure to temporary faculty and student classification (these models are not presented herein but available upon request from the author) were not significant at the .01 alpha level: 17.83 (8) for fall to spring retention (significant at the .05 level) and 9.92 (8) for spring to fall retention (not significant at the .05 level).

share of courses taught by part-time/adjunct faculty and retention can be accounted for student enrollment status (full- or part-time) rather than for exposure to part-time/adjunct faculty. The overall negative association between exposure to part-time faculty and retention is rather a statistical artifact caused by the correlation between a student enrollment status and the level of exposure to part-time faculty.

The findings of the study suggest that the effect of exposure to part-time/adjunct faculty on retention is marginal and disappears after controlling for other student characteristics. Freshmen are more likely to enroll in courses taught by part-time/adjunct faculty, but the effect of exposure to part-time/adjunct faculty does not differ across student classification. No potential risks for student attrition caused by employing part-time/adjunct faculty at the study institution were found in this research.

This study shows institutional researchers the possible inefficiency of the index of exposure to part-time/adjunct faculty. The study herein illustrates that using this index might lead to a statistical artifact, since the index of exposure to part-time/adjunct faculty is highly correlated with student part-time enrollment. Student enrollment status (full- or part-time) or the overall number of attempted hours/courses should be controlled for in the studies using a similar measure of exposure to part-time/adjunct faculty.

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**Table 1.** Primary Instructors of Record at a Study Institution

	Part-Time Faculty	Full-Time Faculty			Graduate Assistant	Administrative Staff
		Temporary	Regular	Total		
<b>Overall Number of Primary Instructors of Record</b>	152	73	393	466	73	46
<b>Tenure Status</b>						
# Not Tenure/Tenure Track	146	73		73	73	46
# Tenure Track	0		141	141		
# Tenured	6		252	252		
<b>Rank</b>						
# Assistant Professor			155	155		
# Associate Professor			110	110		
# Professor			127	127		
# Instructor		73	1	74		
# Lecturer	151					
# None	1				73	46
<b>Highest Degree Obtained</b>						
# Bachelor's	26	5		5	41	3
# Master's	90	57	53	110	18	12
# PhD	17	11	339	350		7
# No information	19		1	1	14	24
<b>Gender</b>						
# Female	77	33	142	175	51	23
% Female	51%	45%	36%	38%	70%	50%
<b>Age</b>						
# younger than 30	26	11	2	13	51	7
# 30 to 39 years old	35	26	76	102	17	8
# 40 to 49 years old	34	16	107	123	5	10
# 50 to 59 years old	38	17	142	159		16
# 60 and older	19	3	66	69		5
<b>Ethnicity</b>						
# Caucasian	133	64	338	402	56	36
% Caucasian	88%	88%	86%	86%	77%	78%
<b>Course Units and Credit Hours</b>						
Avg # of course units (fall)	2.62	4.47	4.26	4.29	1.83	3.25
Avg # of course units (spring)	2.26	4.58	3.94	4.04	1.47	3.93
Avg # of credit hours (fall)	6.52	10.93	10.17	10.30	4.60	7.80
Avg # of credit hours (spring)	5.89	11.92	9.87	10.22	4.34	10.48
<b>Academic Unit</b>						
Arts and Sciences	86	42	237	279	60	19
Business	15	5	37	42		4
Education	23	8	33	41	3	3
Health and Human Performance	10	7	36	43	2	5
Nursing	9	1	18	19		
Technology	9	10	32	42	6	1
Student Academic Services Center					2	14

**Table 2. Share of Courses Taught by Part-Time Faculty**

	FALL SEMESTER						SPRING SEMESTER					
	None	1%- 24%	25%- 49%	50%- 74%	75% - 100%	Total	None	1%- 24%	25%- 49%	50%- 74%	75% - 100%	Total
1.Freshman	1210	1119	728	26	10	3093	1029	681	307	12	10	2039
2.Sophomore	1050	488	335	8	3	1884	1126	426	249	12	6	1819
3.Junior	1146	400	267	12	10	1835	1208	411	258	15	11	1903
4.Senior	1217	347	274	52	23	1913	1447	301	255	59	12	2074
Total	4623	2354	1604	98	46	8725	4810	1819	1069	98	39	7835

**Table 3. Share of Courses Taught by Full- or Part-Time Not Tenure/Tenure Track Faculty**

	FALL SEMESTER						SPRING SEMESTER					
	None	1%- 24%	25%- 49%	50%- 74%	75% - 100%	Total	None	1%- 24%	25%- 49%	50%- 74%	75% - 100%	Total
1.Freshman	432	903	1114	558	86	3093	334	536	786	315	68	2039
2.Sophomore	371	467	672	312	62	1884	324	422	615	374	84	1819
3.Junior	520	449	531	268	67	1835	486	429	590	310	88	1903
4.Senior	695	376	493	236	113	1913	787	410	489	296	92	2074
Total	2018	2195	2810	1374	328	8725	1931	1797	2480	1295	332	7835

**Table 4. Exposure to Part-time Faculty and Not Tenure/Tenure Track Faculty and Student Retention**

	Share of courses taught by part-time instructors						Share of courses taught by part-time or full- time temporary instructors					
	Fall			Spring			Fall			Spring		
	Neither Enrolled Nor Graduated	Enrolled	Odds of Enrollment	Neither Enrolled Nor Graduated	Enrolled	Odds of Enrollment	Neither Enrolled Nor Graduated	Enrolled	Odds of Enrollment	Neither Enrolled Nor Graduated	Enrolled	Odds of Enrollment
None	467	2924	6.26	601	2751	4.58	232	1081	4.66	232	907	3.91
1%-24%	225	1781	7.92	221	1293	5.85	176	1642	9.33	193	1189	6.16
25%-49%	219	1110	5.07	179	632	3.53	296	2016	6.81	358	1630	4.55
50%-74%	7	39	5.57	11	28	2.55	173	964	5.57	172	823	4.78
75%-100%	10	13	1.30	12	14	1.17	51	164	3.22	69	169	2.45

**Table 5. Exposure to Part-time Faculty and Number of Courses Taken**

# of courses taken	FALL SEMESTER					SPRING SEMESTER				
	None	1%- 24%	25%- 49%	50%- 74%	75%- 100%	None	1%- 24%	25%- 49%	50%- 74%	75%- 100%
1	102	0	0	0	18	97	0	0	0	19
2	169	0	0	33	2	160	0	0	22	4
3	104	0	31	3	0	89	0	27	4	1
4	500	0	239	46	4	586	0	239	48	12
5	1028	680	207	24	3	1007	561	131	18	1
6 or more	1488	1326	692	96	0	1413	953	306	44	0

**Table 6. Exposure to Adjunct Faculty and Number of Courses Taken**

# of courses taken	FALL SEMESTER					SPRING SEMESTER				
	None	1%- 24%	25%- 49%	50%- 74%	75%- 100%	None	1%- 24%	25%- 49%	50%- 74%	75%- 100%
1	84	0	0	0	36	79	0	0	0	37
2	123	0	0	64	17	99	0	0	67	20
3	69	0	53	15	1	40	0	52	26	3
4	218	0	333	187	51	244	0	345	209	87
5	347	716	567	247	65	324	580	524	228	62
6 or more	472	1102	1359	624	45	353	802	1067	465	29

**Table 7.** Exposure to Part-time and Faculty and Odds of Re-enrollment for Full- and Part-time students

	Share of courses taught by part-time instructors				Share of courses taught by part-time or full-time temporary instructors			
	Fall		Spring		Fall		Spring	
	Full-time students	Part-time students	Full-time students	Part-time students	Full-time students	Part-time students	Full-time students	Part-time students
None	8.80	1.65	5.43	1.84	7.71	1.65	5.23	1.77
1%-24%	8.07	1.20	5.92	2.00	9.56	1.60	6.30	1.67
25%-49%	5.47	3.17	3.87	1.73	7.43	1.72	4.77	2.00
50%-74%	7.94	1.05	3.65	1.42	6.37	1.94	5.25	2.48
75%-100%	0.75	1.22	1.60	1.18	4.85	1.38	3.61	1.03

**Table 8.** Exposure to Part-time and Faculty and Odds Ratios of Re-enrollment across Student Classification

	Share of courses taught by part-time instructors						Share of courses taught by part-time or full-time temporary instructors					
	Fall			Spring			Fall			Spring		
	1. Freshman	2. Sophomore	3. Junior	1. Freshman	2. Sophomore	3. Junior	1. Freshman	2. Sophomore	3. Junior	1. Freshman	2. Sophomore	3. Junior
None	0.73	0.99	1.60	0.56	1.08	1.95	0.96	0.76	1.43	0.58	1.40	1.19
1%-24%	0.71	1.45	3.03	0.58	1.55	2.63	0.72	0.90	1.56	0.51	1.00	1.99
25%-49%	0.81	1.11	1.81	0.51	1.49	2.53	0.63	1.81	2.57	0.60	1.07	2.73
50%-74%	0.98	0.90	1.19	0.45	1.13	1.69	0.76	1.05	2.20	0.58	1.33	2.12
75%-100%	0.93	2.79	0.77	0.87	1.78	0.76	0.79	1.19	1.47	0.49	1.29	2.25

**Table 9.** Logistic Regression Model of Exposure to Part-time Faculty and Retention

PARAMETER ESTIMATES (SE)	FALL TO SPRING				SPRING TO FALL			
	Model A	Model B	Model C	Model D	Model A	Model B	Model C	Model D
Intercept	0.41 (0.26)	0.35 (0.27)	-0.06 (0.27)	-0.02 (0.28)	0.31 (0.27)	0.24 (0.27)	-0.06 (0.28)	-0.07 (0.28)
Age	-0.05 (0.01)**	-0.05 (0.01)**	-0.01 (0.01)	-0.01 (0.01)	-0.03 (0.01)**	-0.03 (0.01)**	-0.01 (0.01)	0.00 (0.01)
Female	0.04 (0.08)	0.04 (0.08)	0.11 (0.08)	0.11 (0.08)	-0.23 (0.08)**	-0.22 (0.08)**	-0.18 (0.08)*	-0.18 (0.08)*
Minority	-0.08 (0.10)	-0.06 (0.10)	-0.10 (0.10)	-0.09 (0.10)	-0.06 (0.10)	-0.06 (0.10)	-0.07 (0.10)	-0.07 (0.10)
High School GPA * New Freshman	0.63 (0.06)**	0.63 (0.06)**	0.61 (0.06)**	0.61 (0.06)**	0.64 (0.09)**	0.63 (0.09)**	0.63 (0.09)**	0.61 (0.09)**
Transfer GPA * New Transfer	0.63 (0.06)**	0.63 (0.06)**	0.64 (0.07)**	0.64 (0.07)**	0.72 (0.07)**	0.71 (0.07)**	0.76 (0.07)**	0.75 (0.07)**
Cumulative GPA * Continuing Student	0.79 (0.06)**	0.79 (0.06)**	0.76 (0.06)**	0.76 (0.06)**	0.83 (0.05)**	0.81 (0.05)**	0.81 (0.05)**	0.8 (0.05)**
Less than 32 hours earned (Freshman)	-0.65 (0.13)**	-0.64 (0.13)**	-0.66 (0.13)**	-0.65 (0.13)**	-1.19 (0.11)**	-1.21 (0.11)**	-1.18 (0.11)**	-1.19 (0.11)**
Less than 63 hours earned (Sophomore)	-0.47 (0.12)**	-0.47 (0.12)**	-0.48 (0.12)**	-0.48 (0.12)**	-0.53 (0.11)**	-0.52 (0.11)**	-0.54 (0.11)**	-0.53 (0.11)**
On Campus	0.18 (0.09)*	0.16 (0.09)	0.11 (0.09)	0.11 (0.09)	0.23 (0.09)**	0.21 (0.09)*	0.17 (0.09)*	0.16 (0.09)
Loan	0.87 (0.08)**	0.86 (0.08)**	0.73 (0.08)**	0.73 (0.08)**	0.35 (0.08)**	0.33 (0.08)**	0.27 (0.08)**	0.27 (0.08)**
Work Study	1.23 (0.51)*	1.21 (0.51)*	1.22 (0.51)*	1.21 (0.51)*	0.01 (0.19)	0.00 (0.20)	-0.01 (0.20)	-0.01 (0.20)
Scholarship	0.60 (0.13)**	0.58 (0.13)**	0.57 (0.13)**	0.56 (0.13)**	0.34 (0.11)**	0.33 (0.11)**	0.32 (0.11)**	0.32 (0.11)**
<b>College<sup>1</sup></b>								
Arts and Sciences	0.29 (0.13)*	0.29 (0.13)*	0.30 (0.13)*	0.30 (0.13)*	0.07 (0.14)	0.08 (0.14)	0.06 (0.14)	0.07 (0.14)
Business	0.39 (0.15)*	0.40 (0.16)**	0.45 (0.16)**	0.46 (0.16)**	0.25 (0.16)	0.24 (0.16)	0.27 (0.17)	0.26 (0.17)
Education	0.31 (0.18)	0.32 (0.18)	0.25 (0.18)	0.27 (0.18)	0.42 (0.19)*	0.42 (0.19)*	0.37 (0.19)	0.38 (0.19)
Nursing	0.22 (0.21)	0.22 (0.21)	0.28 (0.21)	0.29 (0.21)	-0.11 (0.21)	-0.11 (0.21)	-0.09 (0.21)	-0.09 (0.21)
Technology	0.34 (0.17)*	0.34 (0.17)*	0.5 (0.17)**	0.49 (0.17)**	-0.07 (0.17)	-0.07 (0.17)	-0.01 (0.17)	-0.01 (0.17)
Health & Human Performance	0.27 (0.18)	0.28 (0.18)	0.31 (0.18)*	0.31 (0.18)	0.35 (0.19)	0.34 (0.19)	0.31 (0.20)	0.3 (0.20)
Undecided	0.19 (0.18)	0.19 (0.18)	0.21 (0.18)	0.22 (0.18)	-0.06 (0.18)	-0.07 (0.18)	-0.07 (0.18)	-0.09 (0.18)
<b>Share of Courses Taught by Part-timers<sup>2</sup></b>								
1%-24%		0.15 (0.10)		0.00 (0.10)		0.24 (0.09)*		0.16 (0.09)
25%-49%		-0.10 (0.10)		-0.22 (0.10)*		-0.05 (0.11)		-0.10 (0.11)
50%-74%		-0.17 (0.20)		-0.06 (0.21)		-0.36 (0.22)		-0.31 (0.22)
75%-100%		-1.22 (0.44)**		-0.76 (0.45)		-0.65 (0.38)		-0.42 (0.38)
Part-time student			-1.35 (0.13)**	-1.34 (0.13)**			-1.06 (0.13)**	-1.01 (0.14)**
-2LL	4742.84	4729.53	4639.40	4631.96	4672.03	4657.68	4611.71	4603.63
Model Chi-Square (df)	671.37 (19)	684.68 (23)	774.81 (20)	782.25 (24)	708.90 (19)	723.25 (23)	769.23 (20)	777.30 (24)
Change in -2LL (df)		13.31 (4)**		7.44 (4)		14.35 (4)**		8.07 (4)
AIC	4780.84	4775.53	4679.4	4679.96	4710.03	4703.68	4651.71	4651.63
BIC	4910.49	4932.48	4815.88	4843.73	4836.48	4856.75	4784.82	4811.36

\*\* p&lt;.01, \*p&lt;.05

<sup>1</sup> Reference category = conditionally admitted<sup>2</sup> Reference category = None

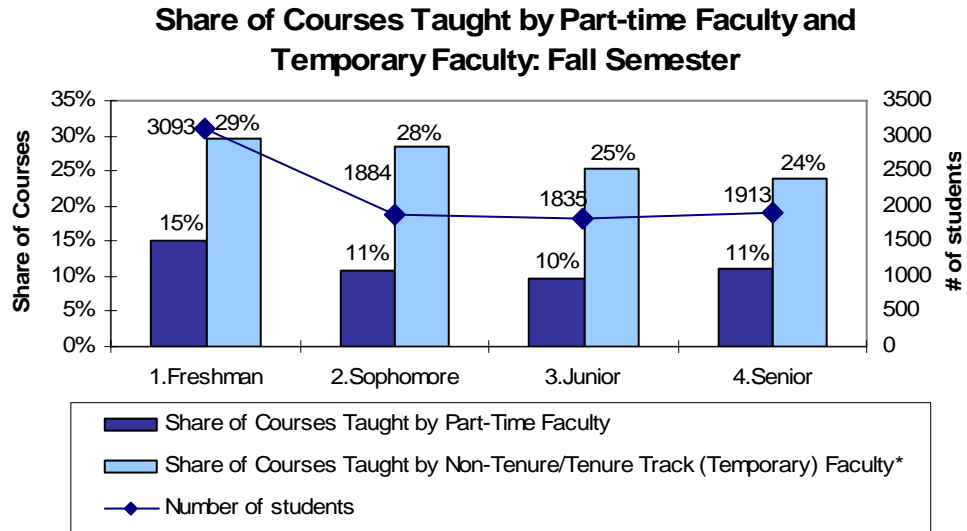
**Table 10.** Logistic Regression Model of Exposure to Temporary Faculty and Retention

PARAMETER ESTIMATES (SE)	FALL TO SPRING				SPRING TO FALL			
	Model A	Model B	Model C	Model D	Model A	Model B	Model C	Model D
Intercept	0.41 (0.26)	0.11 (0.28)	-0.06 (0.27)	-0.14 (0.29)	0.31 (0.27)	0.10 (0.28)	-0.06 (0.28)	-0.14 (0.29)
Age	-0.05 (0.01)**	-0.04 (0.01)**	-0.01 (0.01)	-0.01 (0.01)*	-0.03 (0.01)**	-0.03 (0.01)**	-0.01 (0.01)	0.00 (0.01)
Female	0.04 (0.08)	0.05 (0.08)	0.11 (0.08)	0.11 (0.08)	-0.23 (0.08)**	-0.23 (0.08)**	-0.18 (0.08)*	-0.19 (0.08)**
Minority	-0.08 (0.10)	-0.08 (0.1)	-0.10 (0.10)	-0.10 (0.10)	-0.06 (0.10)	-0.06 (0.10)	-0.07 (0.10)	-0.07 (0.10)
High School GPA * New Freshman	0.63 (0.06)**	0.62 (0.06)**	0.61 (0.06)**	0.61 (0.06)**	0.64 (0.09)**	0.63 (0.09)**	0.63 (0.09)**	0.62 (0.09)**
Transfer GPA * New Transfer	0.63 (0.06)**	0.63 (0.06)**	0.64 (0.07)**	0.64 (0.07)**	0.72 (0.07)**	0.71 (0.07)**	0.76 (0.07)**	0.75 (0.07)**
Cumulative GPA * Continuing Student	0.79 (0.06)**	0.78 (0.06)**	0.76 (0.06)**	0.76 (0.06)**	0.83 (0.05)**	0.81 (0.05)**	0.81 (0.05)**	0.80 (0.05)**
Less than 32 hours earned (Freshman)	-0.65 (0.13)**	-0.66 (0.13)**	-0.66 (0.13)**	-0.66 (0.13)**	-1.19 (0.11)**	-1.20 (0.11)**	-1.18 (0.11)**	-1.18 (0.11)**
Less than 63 hours earned (Sophomore)	-0.47 (0.12)**	-0.48 (0.12)**	-0.48 (0.12)**	-0.48 (0.12)**	-0.53 (0.11)**	-0.53 (0.11)**	-0.54 (0.11)**	-0.54 (0.11)**
On Campus	0.18 (0.09)*	0.16 (0.09)*	0.11 (0.09)	0.11 (0.09)	0.23 (0.09)**	0.22 (0.09)**	0.17 (0.09)*	0.17 (0.09)**
Loan	0.87 (0.08)**	0.85 (0.08)**	0.73 (0.08)**	0.73 (0.08)**	0.35 (0.08)**	0.33 (0.08)**	0.27 (0.08)**	0.26 (0.08)**
Work Study	1.23 (0.51)*	1.22 (0.51)**	1.22 (0.51)*	1.20 (0.51)**	0.01 (0.19)	0.00 (0.20)	-0.01 (0.20)	-0.01 (0.20)
Scholarship	0.60 (0.13)**	0.59 (0.13)**	0.57 (0.13)**	0.56 (0.13)**	0.34 (0.11)**	0.33 (0.11)**	0.32 (0.11)**	0.31 (0.11)**
<b>College<sup>1</sup></b>								
Arts and Sciences	0.29 (0.13)*	0.3 (0.13)**	0.30 (0.13)*	0.31 (0.13)**	0.07 (0.14)	0.08 (0.14)	0.06 (0.14)	0.08 (0.14)
Business	0.39 (0.15)*	0.45 (0.16)**	0.45 (0.16)**	0.49 (0.16)**	0.25 (0.16)	0.26 (0.17)	0.27 (0.17)	0.28 (0.17)*
Education	0.31 (0.18)	0.32 (0.18)*	0.25 (0.18)	0.28 (0.18)	0.42 (0.19)*	0.43 (0.19)**	0.37 (0.19)	0.39 (0.2)**
Nursing	0.22 (0.21)	0.24 (0.21)	0.28 (0.21)	0.28 (0.21)	-0.11 (0.21)	-0.10 (0.21)	-0.09 (0.21)	-0.09 (0.21)
Technology	0.34 (0.17)*	0.38 (0.17)**	0.5 (0.17)**	0.52 (0.17)**	-0.07 (0.17)	-0.04 (0.17)	-0.01 (0.17)	0.02 (0.17)
Health & Human Performance	0.27 (0.18)	0.28 (0.18)	0.31 (0.18)*	0.31 (0.18)*	0.35 (0.19)	0.35 (0.20)*	0.31 (0.20)	0.31 (0.2)
Undecided	0.19 (0.18)	0.2 (0.18)	0.21 (0.18)	0.22 (0.18)	-0.06 (0.18)	-0.07 (0.18)	-0.07 (0.18)	-0.08 (0.18)
<b>Share of Courses Taught by Temporary Faculty</b>								
1%-24%		0.52 (0.12)**		0.27 (0.12)**		0.37 (0.12)**		0.20 (0.12)*
25%-49%		0.23 (0.11)**		0.02 (0.11)		0.12 (0.10)		-0.02 (0.11)
50%-74%		0.10 (0.12)		-0.06 (0.12)		0.22 (0.12)*		0.14 (0.13)
75%-100%		-0.27 (0.19)		-0.29 (0.20)		-0.34 (0.18)*		-0.38 (0.18)**
Part-time student			-1.35 (0.13)**	-1.28 (0.14)**			-1.06 (0.13)**	-1.01 (0.14)**
-2LL	4742.84	4714.60	4639.40	4627.19	4672.03	4652.24	4611.71	4599.21
Model Chi-Square (df)	671.37 (19)	699.61 (23)	774.81 (20)	787.02 (24)	708.90 (19)	728.69 (23)	769.23 (20)	781.72 (24)
Change in -2LL (df)		28.24 (4)**		12.21 (4)*		19.79 (4)**		12.49 (4)*
AIC	4780.84	4760.60	4679.4	4675.19	4710.03	4698.24	4651.71	4647.21
BIC	4910.49	4917.55	4815.88	4838.96	4836.48	4851.31	4784.82	4806.94

\*\* p&lt;.01, \*p&lt;.05

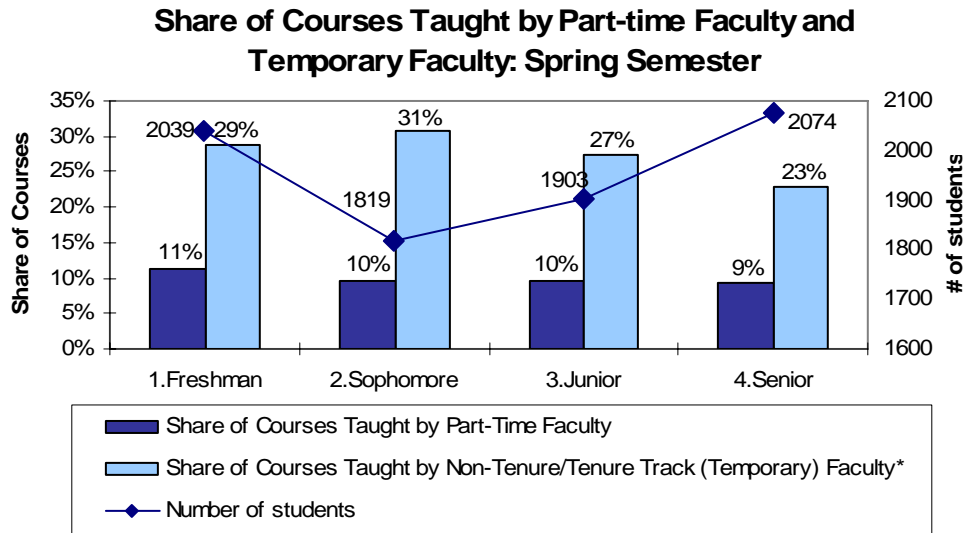
<sup>1</sup> Reference category = conditionally admitted<sup>2</sup> Reference category = None

Graph 1



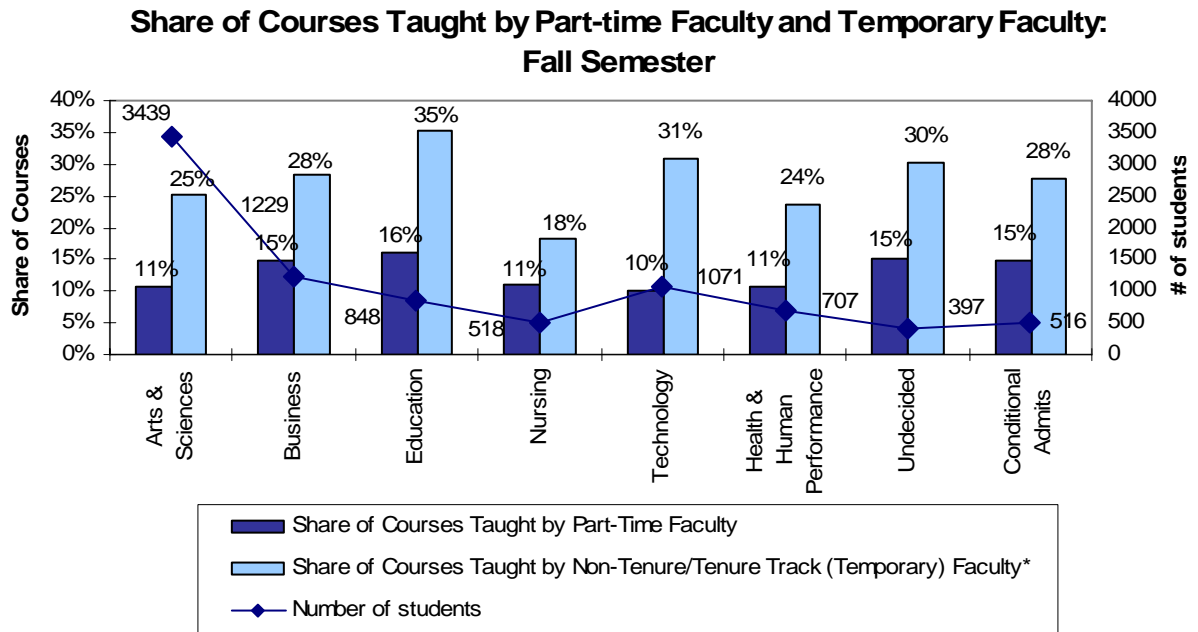
\*Temporary faculty include part-time faculty.

Graph 2



\*Temporary faculty include part-time faculty.

Graph 3



Graph 4

